



## High Performance, Dual Port 10GbE Bypass Server Adapter

### Highlights

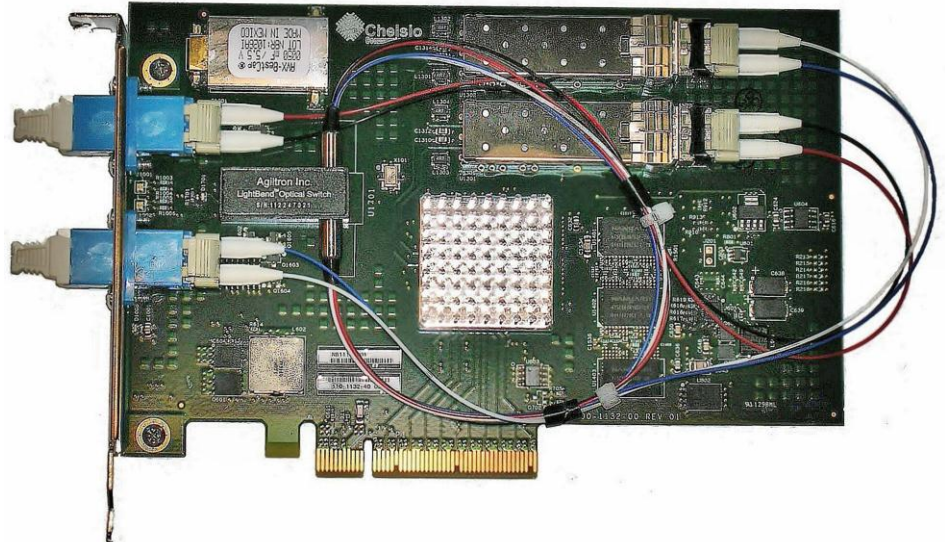
- PCI Express Gen2 x8
- Low Latency
- Supports Up to 1M connections
- Full TCP & UDP offload
- TCP Chimney
- Full iSCSI, FCoE offload
- Full iWARP RDMA offload
- EVB, VEPA, Flex10, VNTag
- PCI-SIG SR-IOV
- Four operational modes to ensure business continuity:
  - Bypass mode
  - Normal mode
  - Drop mode
  - Selective bypass
- Integrated external switch fabric
- Chelsio T4 accelerator for fast, scalable, and reliable networking
- Line-rate full-duplex performance for high-I/O enterprise grade appliances
- Powerful per-connection, per-server, and per-interface configuration and control
- Integrated HW based firewall
- Traffic filtering & management

### Applications

- WAN optimization
- Web acceleration
- Load balancing
- Inline intrusion prevention
- Network security
- Traffic shaping

### Overview

Chelsio's B420-SR is a dual port 10 Gigabit Ethernet Bypass adapter with PCI Express 2.0 host bus interface, optimized specifically for WAN optimization, load balancing, traffic management, and other networking appliances at the network edge. Chelsio's 10GbE B420-SR adapter delivers the highest performance bypass adapter solution available in the industry.



### Bypass Mode Ensures Business Continuity

To help maintain business continuity in the event of a failure, B420-SR provides a programmable bypass mode. The bypass mode automatically activates upon programmed detection of an appliance power down, BIOS boot, or an OS or application program failure. When a detected failure occurs, mechanical relays switch the network traffic so it flows out the second port of the pair on the adapter, bypassing the problem server appliance and maintaining business continuity.

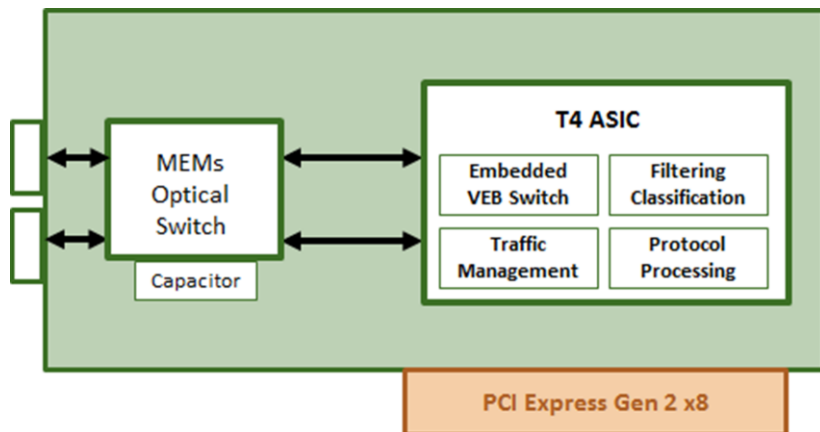
In Bypass Mode Port 0 can be bypassed to Port 1 and Port 1 to Port 0.

The integrated switch can classify flows, redirect and reject traffic without host intervention such that the host listens on desired flows only. This selective bypass can be enabled on a per packet basis at line rate.

B420-SR includes a full-fledged integrated Traffic Manager for robust flow control, traffic management and QoS. It also provides per-connection and per-class rate control.

## T4 - Fourth-Generation Protocol Offload Engine

The T4 is Chelsio's fourth-generation ASIC supports TCP, UDP, iSCSI, iWARP (RDMA), and FCoE offload and includes a PCI Express v2.0 x8 host interface. T4 also adds support for PCIe I/O virtualization. Most of T4 features are enhanced versions of those found in the T3 ASIC. Features that carry over from T3 include stateless offloads, packet filtering (firewall offload), and traffic shaping (media streaming).



### Packet Switching, Filtering and Classification

B420-SR integrates a high performance VEB packet switch, which allows switching traffic, from any of the input ports to any of the output ports (wire-to-wire) and from any of the output ports to any of the input ports (host-to-host). In addition the built-in capabilities of the hardware allow for efficient packet filtering and classification.

### Robust, Proven Solution

Subjected to thousands of hours of compatibility testing, over multiple years of stress testing by several OEM test suites and production deployments in servers, storage systems and cluster computing, Chelsio's robust, stable protocol offload technology delivers proven performance in a wide range of environments. The B420-SR is generations ahead of competing products.

### Software Drivers

Chelsio offers a full suite of protocol software and drivers with the B420-SR adapter. See [www.chelsio.com/support](http://www.chelsio.com/support) for latest info. The software supports operation in both protocol-offload and non-offload modes.

### Ordering info

**Model:** B420-SR  
**Physical interface:** 10GBASE-SR or LR\*  
**Connector:** LC Duplex  
**Media:** MMF or SMF

### Accessories

**SM10G-SR:** 10G short-reach SFP+ optic module  
**SM10G-LR:** 10G long-reach SFP+ optic module  
**SRCABLE3M:** Fiber optic cable, 10GBASE-SR, 3M  
**LRCABLE3M:** Fiber optic cable, 10GBASE-LR, 3M

\*SFP+ optics sold separately. Only Chelsio-supplied modules may be used

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH CHELSIO PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN CHELSIO'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, CHELSIO ASSUMES NO LIABILITY WHATSOEVER, AND CHELSIO DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF CHELSIO PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. CHELSIO PRODUCTS ARE NOT INTENDED FOR USE IN MEDICAL, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS. CHELSIO MAY MAKE CHANGES TO SPECIFICATIONS AND PRODUCT DESCRIPTIONS AT ANY TIME, WITHOUT NOTICE.

Chelsio Communications [www.chelsio.com](http://www.chelsio.com) [sales@chelsio.com](mailto:sales@chelsio.com) +1-408-962-3600

## Specifications

### Host Interface

- PCI Express Gen2 x8
- MSI-X, MSI and support for legacy pin interrupts

### Bypass Modes of Operation

- Bypass control via software
- Software programmable behavior on power fail – either Bypass Mode or Drop Mode
- Firmware control of Bypass/Normal/Drop Modes
- Selective Bypass – Programmable HW traffic classification and redirection without host intervention in normal mode
- Two green LEDs indicate link for each port
- Two yellow LEDs indicate activity for each port
- One green LED on the bracket indicating BYPASS Mode

### High Performance RDMA

- Enhanced RDMA primitives
- iWARP support on Linux OFED
- Microsoft Network Direct support

### UDP & Multicast Offload

- UDP Sockets API
- Low user-to-user latency
- Multicast replication on ingress or egress

### Virtualization

- PCI-SIG SR-IOV
- 128 Virtual and 8 Physical functions
- 144 port virtual switch
- EVB, VEPA, Flex10, VNTag

### FCoE

- Full HBA FCoE (Initiator or Target)
- Open-FCoE Offload (Initiator)
- Ingress & Egress ACL (Access Control List)

### iSCSI Acceleration

- Full iSCSI initiator and target mode stack
- CRC32 offload generation & verification
- iSCSI proxy switching based on SCSI CDB

### TCP/IP Full Offload

- Full TCP implementation including IPv4 & IPv6
- Microsoft Chimney support
- Extensive RFC compliance, fully featured stack
- Full TCP Proxy between any set of connections
- Load balancing and Fail-over capabilities

### Stateless Offloads

- TCP/UDP checksum offload for IPv4 & IPv6
- TSO, LRO, LSO, and GSO for IPv4 & IPv6
- VLAN filtering, insertion & extraction
- Line rate packet filtering and attack protection
- Fine granularity time stamping (down to 4ns)
- Ethernet Routing (packet header rewrite)
- Packet Tracing and Packet Sniffing

### Ethernet

- IEEE 802.3ae (10 GbE)
- IEEE 802.3z (1 GbE) compliant
- IEEE 802.IP priority
- IEEE 802.IQ VLAN tagging
- IEEE 802.1Qbg EVB/VEPA
- IEEE 802.1Qbh VNTag
- IEEE 802.3x flow control
- IEEE 802.3ad load-balancing and failover
- Ether II and 802.3 encapsulated frames
- Multiple MAC addresses per interface
- Jumbo Frames up to 9.6Kbytes

### Physical and Environmental

- Dimensions without bracket:
- 6.60 in. x 2.53 in. or 16.76 cm x 6.4 cm
- Operating Temp: 0 to 55°C or 32 to 131°F
- Operating Humidity: 5 to 95%
- Airflow: 200 lf/m
- Typical power consumption: 12W